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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,519	12/19/2003	Chao-Shi Chuang	ATIP0003USA	1518
27765	7590	11/28/2005	EXAMINER	
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			BHAT, ADITYA S	
			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/707,519

Applicant(s)

CHUANG ET AL.

Examiner

Aditya S. Bhat

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 15-22 is/are pending in the application.
- 4a) Of the above claim(s) 9-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 15-20 and 22 is/are rejected.
- 7) ☐ Claim(s) 7 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/19/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-8, 15-20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nelson et al. (USPUB 2002/0075080).

With regards to claim 1, Nelson et al. (USPUB 2002/0075080) teaches a method for automatically calibrating the frequency range of a phase-lock loop (PLL), the method comprising:

providing a loop filter for accumulating charge to generate a loop-filter voltage;

(Page 1, Paragraph 0015) (Refer to figure 1)

providing a voltage controlled oscillator (VCO) having a plurality of frequency ranges, the VCO receiving the loop-filter voltage and generating an output signal having a frequency according to the loop-filter voltage and a currently selected VCO frequency range; (Page 1, Paragraph 0005)

connecting an input of the loop filter to a constant voltage; (Page 1, Paragraph 0006) and

selecting an optimal VCO frequency range by comparing the frequency of a PLL feedback signal for a plurality of the VCO frequency ranges with the frequency of a

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reference signal, the PLL feedback signal being generated according to the VCO output signal. (Page 1, Paragraph 0005)

With regards to claim 2, Nelson et al. (USPUB 2002/0075080) teaches a feedback divider for generating the PLL feedback signal according to the VCO output signal. (Page 1, Paragraph 0016)

With regards to claim 3, Nelson et al. (USPUB 2002/0075080) teaches a optimal VCO frequency range comprises either a first VCO frequency range or an adjacent second VCO frequency range such that the frequency of the PLL feedback signal is faster than the frequency of the reference signal for the first VCO frequency range and the frequency of the PLL feedback signal is slower than the frequency of the reference signal for the second VCO frequency range. (Page 2, Paragraph 0018)

With regards to claim 5, Nelson et al. (USPUB 2002/0075080) teaches the input of the loop filter is connected to a maximum voltage or a minimum voltage and selecting the optimal VCO frequency range further comprises conducting a linear search starting from a lowest or a highest VCO frequency range and proceeding until the optimal VCO frequency range is found. (Page 2, Paragraph 0024)

With regards to claim 6, Nelson et al. (USPUB 2002/0075080) teaches the input of the loop filter is connected to a medium voltage and selecting the optimal VCO frequency range further comprises conducting a binary search starting from a middle VCO frequency range and proceeding until the optimal VCO frequency range is found. (Page 2, Paragraph 0024)

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With regards to claim 8, Nelson et al. (USPUB 2002/0075080) teaches finding the first VCO frequency range comprises mapping a divide factor of a feedback divider to a predicted first VCO . T frequency range. (Page 1, Paragraph 0016)

With regards to claim 15, Nelson et al. (USPUB 2002/0075080) teaches phase lock loop (PLL) comprising:

a loop filter for accumulating charge to generate a loop-filter voltage; (Page 1, Paragraph 0015) (Refer to figure 1)

a VCO having a plurality of frequency ranges, the VCO receiving the loop-filter voltage and generating an output signal having a frequency according to the loop-filter voltage and a currently selected VCO frequency range; (Page 1, Paragraph 0005) and

calibration logic for selecting an optimal VCO frequency range, wherein during PLL calibration, the input of the loop filter is connected to a constant voltage, and the calibration logic searches for an optimal VCO frequency range by comparing the frequency of a PLL feedback signal for a plurality of the VCO frequency ranges with the frequency of a reference signal, the PLL feedback signal being generated according to the VCO output signal.

With regards to claim 16, Nelson et al. (USPUB 2002/0075080) teaches a feedback divider for generating the PLL feedback signal according to the VCO output signal.

With regards to claim 17, Nelson et al. (USPUB 2002/0075080) teaches a frequency detector receiving the PLL feedback signal and the reference signal, and wherein the optimal VCO frequency range comprises either a first VCO frequency range

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or an adjacent second VCO frequency range such that the frequency of the PLL feedback signal is faster than the frequency of the reference signal for the first VCO frequency range and the frequency of the PLL feedback signal is slower than the frequency of the reference signal for the second VCO frequency range. (Page 1, Paragraph 0006)

With regards to claim 19, Nelson et al. (USPUB 2002/0075080) teaches a switch for selectively connecting the input of the loop filter to a maximum voltage or a minimum voltage depending on a control signal from the loop controller, and wherein during PLL calibration the calibration logic conducts a linear search starting from a lowest VCO frequency range and proceeding until the optimal VCO frequency range is found. (Page 2, Paragraph 0022)

With regards to claim 20, Nelson et al. (USPUB 2002/0075080) teaches a switch for selectively connecting the input of the loop filter to a middle voltage, and wherein during PLL calibration, the calibration logic conducts a binary search starting from a middle VCO frequency range and proceeding until the optimal VCO frequency range is found. (Page 2, Paragraph 0024)

With regards to claim 22, Nelson et al. (USPUB 2002/0075080) teaches: a storage unit storing a plurality of predicted first VCO frequency ranges indexed by divide factors for the feedback divider; wherein during PLL calibration, the calibration logic determines the first VCO operating frequency range according to the predicted first VCO frequency range retrieved from the storage unit according to the divide factor of the feedback divider. (Page 2, Paragraph 0032)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson (USPUB 2002/0075080) in view of Shibahara et al (USPUB 2003/0042985).

With regards to claim 4 and 18, Nelson et al. (USPUB 2002/0075080) does not appear to disclose synchronizing the PLL feedback signal with the reference signal.

Shibahara et al (USPUB 2003/0042985) teaches synchronizing the PLL feedback signal with the reference signal. (Page 9, Paragraph 0099)

It would be obvious to one skilled in the art at the time of the invention to modify the invention taught by Nelson et al to include the synchronization step in order to optimizing currents flowing in the VCO. (Page 1, Paragraph 0008, lines 8-9)

***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter: Claims 7 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 7 and 21:

The primary reason for the allowance of claims 7 and 21 is the inclusion of the method steps of: the optimal VCO frequency range comprises the first VCO frequency

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range when the time duration between the second rising edges of the reference signal and the PLL feedback signal for the first VCO frequency range is shorter than that of the second VCO frequency range, otherwise comprises the second VCO frequency range when the time duration between the second rising edges of the reference signal and the PLL feedback signal for the second VCO frequency range is shorter than that of the first VCO frequency range. It is this/these features found in the claim(s), as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this/these claim(s) allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

Applicant's arguments filed 9/14/2005 have been fully considered but they are not persuasive.

Applicant is reminded that during patent examination, the pending claims must be "given the broadest reasonable interpretation consistent with the specification." Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).



While the meaning of claims of issued patents are interpreted in light of the specification, prosecution history, prior art and other claims, this is not the mode of claim interpretation to be applied during examination. During examination, the claims must be interpreted as broadly as their terms reasonably allowed. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

In this instance applicant argues that the prior art of record does not teach connecting an input of the loop filter to a constant voltage. Although the loop filter in the Nelson reference is not connected to a pre-charge circuit. The pre-charge circuit is not claimed, further the loop filter is directly connected to a charge pump that would provide a constant charge to the loop filter. Therefore the rejection is deemed proper.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gupta et al. (USPN 6,779,024) teaches a dynamically trimmed voltage controlled oscillator.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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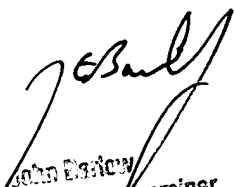
shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aditya S. Bhat whose telephone number is 571-272-2270. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aditya Bhat  
November 21, 2005

  
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